

EXTRACTS FROM WSFO HONOLULU AND WSO LIHUE STATION DUTY MANUALS

TELEPHONE NUMBERS FOR CPHC COORDINATION

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CENTRAL PACIFIC HURRICANE CENTER STAFFING GUIDELINES

Whenever the CPHC is activated, schedule an extra midnight shift (21 or A1) as necessary.

CONDITION - Tropical cyclone to effect the State of Hawaii within 24 hours.

Products Issued: WTPA2x - Marine Advisory
WTPA3x - Public Advisory
WTPA4x - Tropical Cyclone Discussion
WTPA51 - Tropical Cyclone Position Estimates es
mqlmd
WTPA61 - Narrative stating changing conditions as
mqlmd.
woHW3 - Local Statement (Issued by the Public
Service Forecaster)

Delay or discontinue routine issuances of the FPHW1, FPHW2, FPHW3, FPHW4, FPHW10, FOHW1, FOHW2, and FOHW3 with concurrence of the AM/MIC or DMIC.

Coverage: 1. AM/MIC end/or DMIC on duty continuously at the CPHC.
2. Overlap Z, H, and Q shift lead forecasters es follows:

Z shift LF works until 1200 HST and issues 2100Z tropical cyclone package.

H shift LF works until 1930 HST and issues 0300Z tropical cyclone package.

Q shift LF works until 0300 HST and issues 0900Z tropical package and provides telephone support

3. DMIC or Hurricane PL shall work "D" shift to assist with "Z" shift issuances at 1500Z and to coordinate RECCE requirements with NHC. AM/MIC or DMIC assists with 0900Z package.

4. 24-hour telephone coverage shall be provided by supernumerary workers. Other assistance can be obtained by extending aviation and marine shifts forecast shifts and from PRH staff members.

6. AM/MIC or assigned person shall handle press, radio, and TV "interference."

6. There shall be 24-hour electronics technician coverage if the storm is a direct threat or affecting Oahu.

7. Activate the ARES network.

8. AM/MIC recalls selected personnel from leave end/or requests assistance from PRH.

CONDITION - Tropical cyclone to affect the State of Hawaii within 46 hours.

Products Issued: Same es above, except the WOHW3 is issued only es required by the Public Service Forecaster.

Coverage: 1. Lead Forecaster takes over the public service desk if originally scheduled for another position.

2. H shift stays to issue 0300Z advisories and guidance.

3. Q shift LF prepms 0900Z guidance end, if necessary, Q1 shift prepares 0900Z Local Statement.

4. DMIC or Hurricane PL shall work e "D" shift end prepms the 1500Z advisories/guidance, end coordinate RECCE requirements with NHC.

5. AM/MIC, DMIC, or Hurricane PL shall prepms the 2100Z issuances.

6. Telephone assistance from 0500-2100 shall be provided by supernumerary shift workers, recalled personnel, end holdover aviation or marine forecasters. Also available for help em PRH staff members.

7. AM/MIC or designated person shall handle press, radio, and TV "interference."

6. AM/MIC shall consider recalling selected personnel on leave.

9. ARES personnel shall be alerted of pending activation of SKYWARN net.

10. SET shall be alerted of the possibility of 24-hour ET coverage.

11. SMT/TA shall check all emergency supplies end equipment, i.e. flashlights, water containers, etc., to ensure they em available in proper working order.

CONDITION - Tropical Cyclone not threatening Hawaii

Products Issued: Same es those for e tropical cyclone to effect the State of Hawaii in 46 hours, except no local statement is issued.

Coverage: 1. Lead forecaster takes over the public service desk if originally scheduled for another position and issues the tropical cyclone advisories end discussion.

2. A shift LF shall coordinate predetermined RECCE requirements with NHC.

3. AM/MIC, DMIC, or Hurricane PL shall be available to assist with 2100Z end 0300Z issuances if mqlmd.

4. Q shift LF shall prepms the 0900Z issuances.

5. DMIC or Hurricane PL shall be within telephone contact for assistance or answering questions.

ACTIONS TO BE TAKEN BEFORE THE HURRICANE SEASON

The following actions should be accomplished NLT 31 May of each year:

1. Review and critique latest Issuances and drafts of WSOM Chapter C-41, NHOP, and CINCPACINST 3140.1 (x). OPR: AM/MIC, DMIC, Hurricane PL, designated staff.
2. Contact critical weather observers and review instructions. Check supplies. OPR: SMT/TA
3. Prepare, revise, and/or update forms for marine advisories, public advisories, and local statements. Establish sufficient supplies of forms in district desk and overflow file. OPR: DMIC and/or Hurricane PL.
4. Contact civil defense officials and review and coordinate warning procedures. OPR: AM/MIC or Hurricane PL.
5. Conduct statewide hurricane drill in accordance with WSOM A-17. Coordinate drill with CD/WSO's/military agencies. Alert media of drill. See timetable for drills in this section. OPR: Hurricane PL.
6. Have all forecasters review WSOM C-41 and NHOP and participate in a written drill before statewide live drill in which they prepare advisories, local statements, aviation and marine products for a simulated tropical storm or hurricane. OPR: Hurricane PL.
7. Test communications procedures to ensure adequate capabilities. OPR: Hurricane PL.
8. Have AES provide written statement of operational capabilities of equipment statewide per WSOM C-41. OPR: Hurricane PL.

TIMETABLE FOR ANNUAL HURRICANE DRILL

MID MARCH

Memo to WSFO forecasters with a pre-drill exercise. Material delivered to participants should include a hurricane track chart with relevant information on a simulated hurricane.

Lead forecasters should be asked to produce the following:

WTPA2 1 - Marine Advisory
WTPA3 1 - Public Advisory
WOHW3 - Local Statement

The rest of the forecast staff should produce the following:

WOHW3 - Local Statement
FAXX6 - Aviation area forecast
WAXXI - AIRMETS for Hawaiian area
WSPA2 - SIGMET for a tropical revolving storm
FTXX1 - Terminal forecast in FT format
FTP31 - Terminal forecast in TAF format
FZHW - Coastal and offshore marine bulletin

Memo to OICs at LIH, OGG, and ITO with pre-drill exercises. Each staff member should be asked to produce a local statement (LS) for their respective county warning areas from a given hurricane tracking chart. The OICs should also be notified of planned date for live drill.

EARLY MAY

Conduct live drill (mid-week between gam and 10am a good time).

Send a Special Weather Statement a day before to WSO's, press, and CD to remind them of drill. Call CD on telephone to ensure they receive notice. Coordinate with SMT/TA, Det 4, 20WS, and NAVWESTOCEANCEN.

WSFO drill participants should do the following:

Lead forecaster: LS for C & C of Honolulu.
Aviation forecaster: FAXX6, WAXXI, FTXX1, FTPA31, WSPA2
Marine forecaster: FZHW
Outer Island WSS: LS for respective CWA.
WSFO WSS' - Record all 4LS' for NWR broadcast when received.

All drill messages should be transmitted on the CD circuit using a fictitious or no header. Each message must begin with a (continued on next page)

ZCZC and end with NNNN. Drill messages should also have the phrase "THIS IS A DRILL AND IS NOT FOR REBROADCAST OR TRANSMISSION TO THE PUBLIC...REPEATING...THIS IS ONLY A DRILL" at the beginning, middle and end of each message.

A log should be kept of any problems encountered. A report should be submitted to the DMIC as soon after the drill as possible.

LATE MAY

A critique of all written exercises and drill material should be completed and returned to participants. In addition, a memo should be sent to PRH notifying the RD of the completion of the annual drill in accordance with WSOM Chapter A-17.

GUIDELINES FOR BULLETIN PREPARATION

1. Stay on the established best track. Call DMIC or AM/MIC if there is a significant difference that may require a change in track.
2. Call NHC with data for model runs at 0100Z PE6H. Past and present posits should be from the best track. Follow call to NHC with a call to the NAVWESTOCEANCEN duty officer and give the person a posit for model runs from FNOC, Monterey.
3. Do preliminary bulletins. Plot NHC and FNOC model outputs as soon as received.
4. Check plots against preliminary advisory positions and movement. Adjustment is discretionary.
5. The following routine products should be sent routinely at the times indicated:
 - a. WTPA21-25 - marine advisory at 03, 09, 15, and 21 UTC.
 - b. WTPA31-35 - public advisory at 03, 09, 15, and 21 UTC.
 - c. WTPA41-45 - tropical cyclone discussion at 0330 and 1530 UTC.

TROPICAL CYCLONE ADVISORIES

REF: WSOM C-41
NHOP

1. WSFO Honolulu has been designated the Central Pacific Hurricane Center (CPHC) for the Pacific Ocean area east of 180 to 140W longitude and north of the Equator.

2. WSOM Chapter C-41 and the National Hurricane Operations Plan (NHOP) cover procedures for the issuance of tropical cyclone bulletins and advisories. The important points as applicable to the CPHC are summarized below:

a. Advisories and bulletins shall be issued at 0300, 0900, 1500, and 2100 UTC with position times for the respective issuance times. The synoptic position for 0000, 0600, 1200, and 1800 UTC will also be included. The standardized format shall be used for the marine advisory and locally adapted formats shall be used for public advisories and local statements. See forms section of this manual.

b. Following is a list of tropical cyclone products and their appropriate WMO header:

WMO Heading	Product Description
ABPA20 PHNL	Tropical Weather Outlook
ABPA30 PHNL	Tropical Weather Summary
WOPA41 PHNL	Tropical Disturbance Statement
WTPA21-25 PHNL	Marine Tropical Cyclone Advisory
WTPA31-35 PHNL	Public Tropical Cyclone Advisory
WTPA41-45 PHNL	Tropical Cyclone Discussion
WTPA51 PHNL	Tropical Cyclone Position Estimate
WTPA61 PHNL	Tropical Cyclone Update

c. Numbering and naming of tropical cyclones is covered in WSOM C-41 and NHOP.

d. All marine advisories on intensifying tropical depressions, tropical storms, and hurricanes shall contain 12, 24, 36, 48, and 72-hour forecast positions. The 48 and 72-hour positions are designated as outlooks when transmitted on advisories or in verbal communications. The 48- and 72-hour outlooks shall be preceded by a standard statement indicating the uncertainty associated with the forecast positions.

WSFO HNL SDM 2.3
Central Pacific Hurricane Center

4/29/92
(tc.adv)

.. Aerial reconnaissance should be requested for my tropical cyclone in the CPHC area of responsibility, which poses a threat to Hawaii or my other U.S. possession at least 72 hours before gale force winds are forecast to begin. Tasking for reconnaissance should be made through the hurricane forecaster at the NHC after coordination with the AMMIC or DMIC.

PROCEDURES

The hurricane forecaster shall:

1. Complete both the marine and public advisories and have ready for transmission no later than 15 minutes before filing time. This will allow team members to quality check before the advisories are transmitted. Local statements should not be released before the marine and public advisories.

2. Ensure that the marine forecaster on duty issues a WOPN or an amendment to the FZPNPHNL normally issued at 0600, 1100, 1700, and 2300 UTC as soon as a new advisory is issued. This is essential to ensure that the latest information is broadcast.

3. Ensure that the aviation forecaster on duty issues SIGMETs to match the advisories.

4. Send a condensed version of the latest CPHC, JTWC, or NandI advisory to the NWSH Warning and Forecast Branch and FEMA (Washington, D.C. and San Francisco) whenever a tropical cyclone poses a threat within 24 hours to my

U.S. possession or trusteeship in the Pacific. Use the FEMA FMT format or the ADMN20.FEMA history file found in the Hurricane or Public Service Directory

The AMMIC or DMIC and the NWS Pacific Region Director should also be notified of these threats.

5. Ensure that the marine forecaster includes requests for ship reports in the marine bulletins and arranges for special rawinsonde releases and surface observations. See PRH ROML P-6-75 under Special Warning Program Observations section of this manual.

6. Coordinate the transfer of warning responsibility with the NHC whenever a tropical cyclone is about to enter the CPHC area from the east and with the Tropical Duty Officer at the NAVWESTOCEAN CEN for transfer to JTWC when a system is forecast to cross the 180 meridian from east to west. The last advisory issued by the CPHC should contain a statement that future advisories will be issued by the JTWC, Guam.

WSFO HNL SDM 2.3
Central Pacific Hurricane Center

4/29/92
(tc.adv)

The public service forecaster shall maintain a weather watch for tropical cyclones in the western North Pacific and in the South Pacific at all times when the CPHC is not active. Advisories should be relayed to NWSH and FEMA per instructions in Item 4 above. A special clipboard shall be maintained during the course of each storm for filing:

- Advisories
- All special reports received pertaining to damage, injuries, or deaths.
- Copies of significant weather reports, showing sustained winds, peak gusts, etc.

WSFO HNL SDM 2.3
Central Pacific Hurricane Center

4/29/92
(tc.adv)

PRODUCT ISSUANCE TIMES

WTPA2x (JTC)	WTPA3x (UTC)	WTPA4x (UTC)	WOHW3 (LS) (UTC)	Prepare (HST)	Issue by (HST)
1500				0200-0430	0430
	1500			0200-0430	0430
		1530		0500-0530	0530
			1500*	0430-0500	0500
2100				800-1030	1030
	2100			0500-1030	1030
			2100*	1030-1100	1100
0300				1400-1630	1630
	0300			1430-1630	1630
		0330		1700-1730	1730
			0300*	1630-1700	1700
0900				2000-2230	2230
	0900			2000-2230	2230
			0900*	2230-2300	2300

* Local statements shall be issued by the lead forecaster working the public service desk.

WTPA51-Tropical Cyclone Position Estimates shall be issued hourly when the storm is under liftoff surveillance and within 200 nautical miles of land based radar. Estimates shall be prepared a short time before each hour, except at times when advisories are issued (assuming that there is an operational radar at WSFO or reports are available).

HURRICANE WARNINGS - State of Hawaii

Ref: WSOM C-41
National Hurricane Operations Plan (NHOP)
CINCPACINST 3140.1(x)

1. For **Marine advisories**, use the **WMO heading WTPA21-25 PHNL** for **tropical depressions, tropical storms**, or hurricanes.
2. Issue the first public advisory whenever a **tropical cyclone** develops or moves into the CPHC area of **responsibility**. Public **advisories** shall be issued using the **WMO heading WTPA31-35 PHNL**.
3. **Unless otherwise** instructed, the **lead** forecaster (LF) on shift **will normally be designated** the hurricane forecaster and **will be assigned responsibility** for issuing advisories. Routine public **service** products and local statements shall be a function of an **assigned** or designated public **service** forecaster. During critical periods, forecasters are reminded that warnings, watches, and local statements take precedence over routine issuances.

HURRICANE SHIFT **COVERAGEDURINGCONDITIONS I, II, AND III.**

For definitions of **Conditions I, II, and III** and actual **manning** of shifts at WSFO Honolulu during these situations, see **Section 4** of this manual: **Hurricane Shift Coverage**.

4. Scheduled **advisories** may be supplemented by Intermediate **advisories** Issued at 2- or 3-hour intervals whenever a **tropical storm** or hurricane is expected to affect any **portion** of the State **within** 24 hours or less.
5. **Special advisories** may be **issued** whenever the **following criteria** are **met**:
- conditions** require a **hurricane/tropical storm** watch or **warning** be Issued,
 - the **classification** of a **tropical** cyclone **is** changed,
 - conditions require** change or **cancellation** of an existing coastal warning, or
 - a tornado threat develops or the hurricane forecaster **believes** other **significant** changes have occurred.

6. ~~Intermediate~~ and ~~special~~ advisories Issued at other than normally scheduled time shall be identified using the number of the preceding regularly scheduled advisory with a capital letter added (A, B, etc.).

WSFO HNL SDM 2.3 cont'd
Central Pacific Hurricane Center

rev 6/25/91
(sdm2.3)

7. Tropical cyclone updates are **brief** statements used **in lieu of or preceding** special **advisories** to inform of **significant** changes in a tropical cyclone or the **posting** or cancellation of watches and **warnings**. Updates shall be issued **using** the WMO heading **WTPA81 PHNL**.

8. If a tropical storm or hurricane is expected to affect the Hawaiian Islands within 24 hours, send a copy of the latest **marine** advisory to NWSH Warning and Forecast Branch (W/OM11, using the **special** format (FEMA.FMT) in the hurricane MC directory. If after normal working hours or on a **weekend/holiday**, call the Operations **Division** Duty Officer.

9. Alert the **critical weather reporting** network and ham radio operators network when **tropical storm/hurricane conditions** are expected **within 48** hours. **Review** type of **observation** and method or **transmission** and set up **contingency** plans for **communicating** if required.

[illegible]

WSFO HNL SDM.23 6/11/92
central Pacific Hurricane center (chk/ls)

CHECK LIST OF ACTIONS TO BE TAKEN WHEN

- 1) A TROPICAL CYCLONE **IS** A POSSIBLE THREAT TO A COUNTY AREA
2) A **TROPICAL** CYCLONE **WATCH/WARNING** IS **ISSUED** FOR A COUNTY **AREA**

1. **NOTIFY AM/MIC.** If absent the DMC, the RD, or Chief TSD in the 1.1 order.
2. **NOTIFY WSOs...** when a tropical cyclone is within 300 miles of county warning responsibility area to take special RAOBs. OICs should also be alert to request special 3 and 6 hourly observations from second order stations.
3. **NOTIFY STATE AND COUNTY CIVIL DEFENSE.** By telephone alert if no watch/warning. By HAWAS if watch/warning.
4. **CONSULT WITH SFDF.** Ensure you routinely receive 6-hourly positions and classifications. When the storm is within 300 miles of the Hawaiian Islands, request hourly position and intensity reports. Ensure that all available DMSP and NOAA polar imagery are being received from the AF.
5. **NHC COORDINATION.** Make coordination calls with NHC when cyclone is between 137W and 140W.
6. **RECONNAISSANCE.** Arrange only through CARCAH at NHC. Early morning coordination should be made by 1530Z. Requests should be made to the hurricane forecaster who will pass them to CARCAH. Amendments to RECCE edked may be made at any time later in the day. The AM/MIC should send RECCE mission performance evaluations to CARCAH if the mission is either outstanding or unsatisfactory.
7. **NUMERICAL GUIDANCE.** Forecast guidance...model runs for the QLM, EPHCB1, XTRP, HURN, CLIP, BAMD, BAMB, BAMS, PSS, PSDE, and SHFR should be requested from NHC. Input parameters should be relayed by telephone to NHC by 0100Z, 0700Z, 1300Z, and 1900Z. If a hurricane forecaster is not on duty and QLM guidance is required, call the NMC Senior Duty Met to have a run initiated. Provide NAVWESTCCEANCEN the same information to get the OTCM and TPAC model runs.
8. **LOG...** all actions as they occur on LOG OF ACTIONS TAKEN or in the log book provided.
9. **COMMUNICATIONS CHECK.** Initiate a test on HAWAS and the State Radio (Yellow Net - WLS96) to ensure proper functioning.

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10. **ADVISORIES.** Double **check** and **proofread** **advisories** and local statements before transmission.
11. **EMERGENCY STAFFING.** Arrange for emergency **staffing**. Request **extra** staff from **RD** if necessary. **Curtail** all leave and recall people from leave If necessary and practikal. Contact Area **IAES** and arrange for **EL** staffing.
12. **MARINE BULLETINS.** Ensure the **marine** forecaster Includes a statement **requesting special ship observations** addressed to **OBS METEO HONOLULU** In the **FZPN, FZHW,** and **WOHW1/WOPN** bulletins.
13. **PREPARE FOR MEDIA.** Have **available graphics** depicting track, safety rules, **climat tracks,** etc. Ensure a **monitor containing appropriate** animated **satellite** Imagery is available In **media** center.
14. **RADAR.** Call the Hkkam Base **Weather Station,** **KOKEE,** and **KAALA** and arrange for **hourly** radar **observations.** Coordinate with **FAA** approach control.
15. **NOTIFY NWSH.** When a suffkiently severe event **is** likely to **strike** the Islands contact the **NWSH** Warning and Forecast Branch (**W/OM1 1**) during normal **business** hours. At all other **times,** contact the **designated** duty officer as per **list** Included In **Section 3** (Telephone Numbers) of **this** manual.
16. **SNORT FUSE WARNINGS.** **Coordinate possible** use of **EBS** with State CD. See Emergency **Operations** Manual
17. **CRITICAL WEATHER** OBSERVERS. Contact **observers** on **critical** weather observers **list** and arrange for reports. Use caution to **avoid** unnecessary alarm or spread of rumors.
16. **EMERGENCY** COMMUNICATION& **Alert** **ARES operators** and have them **standby** in case they are needed. Have **ETs** or Emergency **Radio PL** **checkout** ham **radio** equipment.

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HINTS AND TIPS FOR THE HURRICANE FORECASTER

1. If the state **is being** threatened, get the advisory to **Civil Defense** **using HAWASnet**, then follow **with** hardcopy for the rest of the world and **confirmation** for CD.
2. A **hurricane** watch and a tropical storm warning can be in effect at the same **time**.
3. Tropical Storm Watches should be Issued for tropical storms not expected to reach **hurricane** strength or for nearby **tropical** systems or **depressions** expected to reach only **T.S.** strength. (NOTE: Recommend the Tropical **Storm** Watch not be used, **if** at all **possible**.)
4. Tropical Storm Warnings should be issued when tropical **storm conditions** are expected. **Accordingly**, they may be Issued on either **side** of a **hurricane** warning area.
5. **Tropical Weather Outlooks (TWOs)**, prepared by the **satellite meteorologist**, should be **coordinated** with the **hurricane** forecaster and

checked for **consistency** before transmission.

6. Be careful when comparing a system with a past **storm**.

7. **Providing positions to CD and other agencies:**

- It is **alright** to pass on **RECCE** **fixes**.
- When **giving** out **satellite** **fixes** (**depending** on **quality**), couch with **reliability** terms (**IR** vs **VIS**), time, not **representative** of present and past movement, etc.

6. **Transmissions** on **HAWAS** are recorded, so be **caeful** of what is said over the system.

9. Don't wait **until routine times** to make changes. This is a common trap we all fall into. The **WTPA61is** is a quick and convenient way to update.

10. Shift Coverage:

- a. For far away systems - augment **mid-shift**. LF does public and tropical cyclone bulletins. **Augmentee works** the aviation desk. **DMIC will** usually come **in to coordinate** RECCE.
- b. System closing in and a threat - augment **mid-shift with** an aviation and a hurricane forecaster. **MC, DMIC, and SFSS Manager will** also be on hand.

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11. Try not to duplicate ~~discussions, i.e.,~~ between the FP3 and WTPA41-45. In the FP3, just add the statement "SEE WTPA41 FOR SPECIFIC DETAILS." This ~~is~~ okay for FP3s ~~issued~~ at 0315 and 1515Z. The ~~following~~ are suggested for the FP3 ~~issued~~ at 2115Z:

- a. no **significant** changes **occurring**, "NO SIG CHANGE FROM **WTPA41** ISSUED A **1530Z**."
- b. If a signifkant change **is** going on, "SEE SPECIAL ADVISORY."
- c. If there is an **apparent** change **in** progress, "SEE **WTPA41** PHNL **xx0330**."

12. QPF - the NMC Heavy Precipitation Branch (HPB) should call the CPHC if their quantitative precipitation model predicts rainfall of 4 inches or more over the state from a tropical cyclone approaching the Hawaiian Islands. If no call is made and a T.C. is bearing down on Hawaii, call the SDM or HPB and request a QPF. This is just another piece of guidance and strictly conjecture, so use with caution if used at all.

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LOCAL STATEMENTS (LS)

Definition: A public release prepared by a WSO or WSFO in or near a threatened area giving SPECIFIC details for its area of county responsibility on:

- (a) Weather conditions (where a hurricane is located and where it is moving).
- (b) Sections that should be evacuated (alter CD has recommended evacuation).
- (c) Other precautions necessary to protect life and property.

PROCEDURES:

1. LS's should normally be issued whenever WSFO's county warning area (CWA) is affected by:

- (a) a tropical storm watch/warning.
- (b) a hurricane watch/warning
- (c) evacuation orders
- (d) tumors which the MIC feels should be countered by appropriate statements.

When, for any reason, warnings from the hurricane center are inadequate to cover current or imminent events, LS's should include such local warnings as necessary for the protection of life and property.

2. Time of Issuance.

- (a) At regular and frequent intervals of 2 or 3 hourly intervals or more frequently if information and circumstances warrant.
- (b) LS's should NOT be released immediately before an advisory.

3. General Instructions.

- (a) LS's should amplify, not restate or conflict with hurricane center releases.
- (b) LS's should NOT IN ANY WAY change any of the forecasts given in the latest advisory.
- (c) Remember that a hurricane warning supercedes ALL other warnings. It is not necessary to explicitly state high surf advisories, flood warnings, etc. when a hurricane warning is in effect. Those warnings become necessary beyond the periphery of the hurricane warning area and as the hurricane approaches or leaves an area. Wording, such as torrential rain, present high surf and wind, as well as trends of these items should be included in the LS's.
- (e) Specific geographical areas or portions of the Island should be mentioned when the entire Island is not under the same threat.

PROCEDURES FOR OBTAINING HURRICANE MODEL GUIDANCE FROM NHC/NMC

1. Fill out the "Tropical Cyclone Model Worksheet". A sample is attached.
2. FAX to NHC 1-(305)-536-8881. Unfortunately, the FAX machine at NHC is in an unmanned area, so a follow up call to the duty hurricane specialist (FTS 350-5547) is required.
3. Telephone NAVWEST (471-0004) and give the tropical duty officer (TDO) the current time information.
4. Deadlines for providing input parameters to NHC: 0100Z PE6H.
5. The outputs from the various models will be sent by NHC under the heading WHXX1KMIA usually within 30 minutes after input data is provided. The data for the QLM will be sent under the header WHXX04 KWBC about 4 hours after the 00Z and 12Z synoptic times.

6. Following are the models currently being run by NHC and included in their WHXX1KMIA bulletin:

Acronym	Model
XTRP	eXTRaPolation - A pure extrapolation model
HURN	HURricane aNalog (formerly EPAN65)
CLIP	CLImatology and Persistence (formerly EPCL64)
BAMD	Beta-Advection Model Deep layer - The Beta-Advection Model with a mean layer averaged between 650 and 200 mb.
BAMN	Beta-Advection Model Medium layer - The Beta-Advection Model with a mean layer averaged between 650 and 400 mb.
BAMS	Beta-Advection Model Shallow layer - The Beta-Advection Model with a mean layer averaged between 650 and 700 mb.
PSS	Pacific Statistical Synoptic (formerly EPSS87)
PSDE	Pacific Statistical Dynamic Early run
SHFR	Statistical Hurricane Intensity FoRecast (formerly SHIFT)

7. The WHXX1KMIA bulletin is stored in the PRIME data base and can be displayed by entering H27 from the Hurricane Menu.

H30 will display the WHXX04 KWBC bulletin which contains the QLM output.

Additional Model Definitions are as follows:

P91E - National Hurricane Center's Pacific version of the Statistical Dynamical model for the Atlantic and Gulf of Mexico. It consists of Atlantic Predictors and Pacific climatology and persistence. This is an interim model until one can be developed for the East and Central Pacific.

The following are definitions of Navy models:

HPAC - Half Persistence And half Climatology
CLIP - CLImatology and Persistence
CLIM - CLImatology
XTRP - eXTRaPolation
SBAM - Shallow layer Beta Advection Model
OTCM - One way Tropical Cyclone Model
TOTL - TOTaL analog
FBAM - Fleet Numerical Oceanographic Center Beta Advection Model

6/25/91
(recon)

TROPICAL CYCLONE AERIAL RECONNAISSANCE

[illegible]

- E. REMARKS.

B-2 SECTIONS OF WSO LIHUE SDM

SDM HURRICANE OPERATIONS WSO LIHUE, HI
11/09/90

REFERENCE: WSOM C - 41 (8/2/90)
 ROML P - 73 - 11 (2/2/82)

SECTION 5.1

INTRODUCTION: This section contains guidelines for conducting the NWS operations for hurricane warning service. Written instructions cannot cover every situation, therefore, the employee's initiative and professional judgement will be exercised in meeting and dealing with these events.

SECTION 5.2

RESPONSIBILITY: The NWS has no greater responsibility than preparing and distributing warnings and forecasts of impending severe weather. There will be times when routine work has to be temporarily suspended in order to meet this obligation. Every effort will be expended to assure that this service is accomplished in the most expeditious and effective manner possible.

SECTION 5.3

DEFINITIONS: A. **Tropical Storm Watch** - An announcement that a tropical storm, or tropical storm conditions poses a threat to coastal areas generally within 36 hours.

 B. **Tropical Storm Warning** - A warning issued for tropical storm conditions including sustained winds within the range of 39 to 73 mph (34 to 63 knots) expected in a specified coastal area within 24 hours or less.

 C. **Hurricane Watch** - an announcement for specific areas that a hurricane or an incipient hurricane condition poses a possible threat to coastal areas generally within 36 hours.

 D. **Hurricane Warning** - a warning that sustained winds of 74 mph (64 knots) or higher associated with a hurricane are expected in a specified coastal area in 24 hours or less.

 E. **Local Statement** - A public release prepared by a Weather Service Office (WSO), or Weather Service Forecast Office (WSFO) in or near a threatened area giving specific details for its County Warning Area (CWA) on:
1) weather conditions, 2) sections that should be evacuated per Civil Defense orders, and 3) other precautions necessary to protect life and property.

F. Advisory - Official Information issued by the Hurricane Center (CPHC) describing all tropical cyclone watches and warnings in effect, along with details concerning tropical cyclone locations, intensity and movement, and precautions that should be taken.

SECTION 5.4

PROCEDURES: Upon official notification by the Central Pacific Hurricane Center (CPHC) of an IMPENDING Hurricane/Tropical Storm Watch, the employee receiving the notification will:

1. Notify the OIC/AOIC.
2. Inform the **Kauai Civil Defense Administrator** (KCDA).
3. Take survey of operational supplies and equipment:
a) upper air b) surface c) weather fax
d) printer ribbons & paper
4. Check status of all equipment (including back-up):
a) upper air b) surface c) facsimile communications d) automatic stations
e) NWR Kokee Xmtr f) NWR monitor
g) station vehicle
5. Take visual checks of emergency supplies:
a) back-up lights (including flashlight batteries)
b) stored drinking water
c) rations (if any) d) first aid kit
e) emergency generator fuel & oil
f) storm shutters
6. Enter actions taken in Stations Log Book.

NOTE: During non-working hours, contact **Kauai P. D.** (County Warning Point) and request they relay the information to the KCDA.

SECTION 5.4.1

OIC/AOIC ACTIONS: Upon notification of an IMPENDING Hurricane/Tropical Storm Watch, the OIC/AOIC will:
1. Alert WSO Lihue staff members
2. Confer with CPHC/WSFO Honolulu
3. Confer with Kauai Civil Defense Agency
4. Assure Kauai P.D. informed.
5. Prepare for storm operation

SECTION 5.4.2

ACTIONS UNDER WATCH CONDITION: Upon being notified of Tropical Storm/Hurricane Watch condition by the CPHC/WSFO HNL, the employee on shift will follow the guidelines given in Appendix A.

The OIC/AOIC will complete appropriate entries on WSO Lihue Form #5. In addition, the OIC/AOIC will assure that:

1. The Watch message is on both code-a-phones
2. Local radio stations have been notified
3. The station is ready for storm operations
4. sufficient staff is on hand (call in more if needed)
5. Notification list is completed
6. Perform Safety procedures:
 - a) Ensure safety precautions of staff members & families have been taken of.
 - b) Secure Station facilities - see check list on WSO Lihue Form #5
 - c) Recheck emergency operations & survival status

Unless otherwise designated, the OIC/AOIC will prepare and transmit all Tropical Storm/Hurricane Local Statements. The OIC/AOIC will also respond to all media inquiries.

SECTION 5.4.3

ADDITIONAL STAFFING: When additional staffing are called in, the distribution of tasks will be as follows:

1. Plotting Desk:
 - a. Maintain all advisories on separate clipboards in numerical order, with the latest advisory on top.
 - b. Plot storm track positions.
 - c. Solicit Radar reports from HANG, Kokee and Barking Sands weather unit.
 - d. Solicit reports from CD, PD, and Critical Observers Network.
 - e. Interrogate Automatic Stations.
 - f. Inflate & release balloon.
2. RAOB Desk:
 - a. Perform Upper Air observation.
 - b. Assist Plotting Desk when free.
 - c. Assume the duties of employee on previous shift when he/she is relieved from duty.

SECTION 5.4.3.1

WARNING CONDITIONS - Upon being notified of Tropical Storm/Hurricane Warning conditions, unless otherwise designated, the OIC/AOIC will complete all entries on WSO Lihue Form #5. If not already done, additional staffing will be brought in at this time.

In addition, each staff member will:

1. Have ensured the safety of his/her family.
2. Report to duty as directed by the OIC/AOIC scheduled.

SECTION 5.4.3.2 (Continued):

3. Remain on duty until properly relieved or released and/or conditions are declared safe by local authorities.
4. Inform the OIC/AOIC by phone if unsafe traveling conditions impedes reporting to duty.
The employee will report to duty as soon as traveling conditions have been declared safe by local safety officials.
5. Not, under any circumstances expose him/her-self to physical danger.

SECTION 5.5

HURRICANE OBSERVATIONS:

1. **Synoptic Observations:** Every effort should be made to obtain high cloud movement and report this information in the "56DLMDH" group of the synoptic message. Special effort should be made to obtain this information whenever a hurricane/tropical storm is within a 500 mile radius of the station.
2. **Upper Air Observations:** Take special rawinsonde observations at 0600L & 1800L. In lieu of Pibal, whenever a Hurricane/Tropical Storm is within 300 miles of the station. Special Rawinsonde observations will also be taken when requested by the Central Pacific Hurricane Center (CPHC).

Unless otherwise instructed by the CPHC, special rawinsonde observations will terminate at 106 millibars.

If the "EYE" of the storm should pass over the station, an effort should be made to release a rawinsonde within the "EYE". However, it is not desired nor intended that employees expose themselves to undue risk in making such a release.

3. **Radar Reports:** Every effort should be made to obtain radar reports from the weather unit at Barking Sands and the HANG at Kokee AFS at 3-hourly intervals. These reports will be forwarded to the CPHC by telephone, then followed by an administrative message.

4. **Automatic Observing Stations:**
Interrogations of LARCs, MWTs, and ARCs
will be made at one hour **intervals** under
IMPENDING conditions.

Interrogation frequency will Increase to **15** minute Intervals under **WARNING** conditions.

SECTION 5.6

WSO's should normally issue local statements when it's CWA is affected by:

- A local **statement** takes the **place** of Severe **Weather**, Special Weather, **Marine** Weather, Coastal Flood, and Flash Flood statements during **Tropical Storm/Hurricane** Warning conditions.

When for any reason, warnings are not **received** from the **CPHC**, or **is inadequate** to cover current or **imminent** events, kcai statements **should include** local warnings as are necessary for the **protection of life** and property.

LOCAL STATEMENTS ISSUANCE: Local statements should be issued at regular and frequent **intervals**. When a tropical storm or **hurricane** is close to the Coast, **LS's** should be **issued** at 2 or 3 hourly intervals, and **more** frequently **if** information and **circumstances** warrant.

Local statements do not necessarily need to follow immediately after the issuance of a new advisory. And it should not be released immediately prior to an advisory.

[illegible]

LOCAL STATEMENT FORMAT & CONTENT: This order of contents may be **varied**, but the most important **items** should be first. The contents shall not in **anyway** change any of the forecasts given in the latest advisory. **Format** and content **will** be as follows:

- heights and times expected, present height and their locations, forecast surf heights.

6. Present winds and locate: and **expected** time of onset of tropical storm/hurricane force winds.
9. Any **required** statements on potential tornado and flash flood threats, **rip** currents, beach erosion, **etc.**
10. **Time** of next, or **final** statement.
11. Name of **employee issuing** the statement.

Routine **LS's** may cease when the tropical storm/hurricane is no longer a threat to Its CWA. All **LS's** shall be unnumbered and use a mass **media standard** heading. The word **"BULLETIN"**, should be used on the line **preceding the heading** on all messages **requiring emergency actions**.

LOCAL STATEMENT EXAMPLES: See exhibits A - E

REPORTS: The OIC/AOIC shall prepare and submit the following reports as indicated.

PRELIMINARY REPORT: This report will be prepared by the WSO issuing local statements on a storm. This report will be transmitted to the CPHC within 2 days following the transmission of the latest public release.

Within 5 days following the last LS, an updated version of the preliminary report will be sent via mail to the CPHC.

.....

and a copy to the **Regional** Director. This report **should** include accounts of unusual **storm** damage (**including photocopies** of barograph or other recorder traces, pictures, etc.). The following items will be included in **this** report:

1. **Highest sustained wind speed (knots)**, peak gusts (knots) and time of **occurrence (UCT)** at the **office**, and also any other **within** the **CWA**.
2. **Lowest sea level pressure (millibars)** and **time of occurrence (UCT)** at the office, and any other **within** the **CWA**.
3. Station **rainfall amounts (inches)** and **duration**, and any other **In the CWA**. List the **1, 6, 12**, and 24 hour amounts (inches) and **identify** with date/time UCT.
4. Maximum **storm tide heights (feet)** above Mean Sea Level, and **height** above normal. Identify **location** and **time (UCT)** if known.
6. Extent of beach **erosion**.
6. **Flooding/Flash Flooding - locations and times (UCT)**.
7. Tornadoes - locations and **times (UCT)**.
6. Preliminary storm effects such as death, injuries, dollar damages, number of **people** evacuated/homeless. etc. **within** the **CWA**.

INFORMATION FOR STORM SURVEY: A copy of all releases shall be mailed to the CPHC and Regional Director within 7 days following the issuance of the last local statement.

CLIMATOLOGICAL REPORT: This office shall mail County casualty and damage totals, along with the supporting WS Form F-60, to the CPHC and Regional Director within 30 days after the storm.

ACTIONS TO BE TAKEN WHEN A TROPICAL STORM/HURRICANE IS A

POSSIBLE THREAT OR A WATCH/WARNING IS ISSUED FOR KAUAI COUNTY

1. POSSIBLE THREAT:

- a. **Notify** OIC/AOIC **immediately**.
- b. Inform **Kauai Civil Defense Administrator**.
- c. Inform **Kauai P.D. of situation**.
- d. **Obtain** radar reports from Kokee HANG and **Barking Sands** Weather Station.
- e. Alert **Critical** Weather Observers Network and request weather reports in **their** area.
- f. **Interrogate** all automatic observing **stations** at one hour intervals.
- g. **Relay** all reports **received** to **CPHC/WSFO** Hnl Lead Forecaster.
- h. Issue Special Weather Statement If necessary.
- i. Be prepared to issue follow-up statements.
- j. Maintain log of actions taken (**WSO Lih Form #19**)

2. WATCH/WARNING:

- a. **Notify** OIC/AOIC **Immediately**.
- b. Checkoff WSO **Lihue Form #5 & 5A**.
- c. Issue **Tropical Storm/Hurricane** Local Statements and transmit under **WOHW3 PHL heading**.
- d. **Obtain** updated radar reports from Kokee **HANG** and Barking Sands Weather Station at one hour **Intervals**, If necessary.
- e. **Obtain** updated reports from **Critical** Weather Observer Network at one intervals, **if** necessary.
- f. Increase **automatic observing** station **Interrogations** frequency to every **half** hour under WATCH..... and every 15 minutes under WARNING.
- g. Relay all Information/reports to **CPHC/WSFOHNL**, by phone **if** necessary.
- h. Be prepared to Issue **follow-up** Local Statements.
- i. **Maintain** log of **actions** taken (WSO Lih Form **#19**)

[illegible]

TROPICAL STORM/HURRICANE OPERATIONS CHECK-LIST

I. EQUIPMENT STATUS:

- A. SURFACE: HQ93 Barograph F420 Wnd TBG
E/A Ops E/A Wnd LBC MAPSO
Automatic Obs Stns
a. Back-ups
- B. UPPER AIR: Microarts ART HGE
a. Back-u
- C. FACSIMILE: WEFAX ALDEN Back-ups
- D. COMMUNICATIONS: LABS CD Net GOV'T Radio AD
Code-A-Phones (CAP) Back-ups

ADMIN Fax

E. EMERGENCY POWER GENERATOR:

Test	Fuel	Oil
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II. SUPPLIES

- A. SURFACE:
MF1-1 OA & B Forms **Barograph** Forms/**Ink** **Printer** paper
 E/A Recorder Ink
- B. UPPER AIR:
 1000 gram Balloons Twine Parachutes **Lite** Unites
 H_2 Gas (In Storage tank)
- C. **FACSIMILE:**
 Paper
- D. COMMUNICATIONS:
 PRINTER PAPER CAP Cassette Tape
- E. SURVIVAL:
 Food Water (**Drinking**) Water (wash, etc.)
Flash light

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WSO LIHUE FORM #5

Rev. 11/09/90

PART 1 of 2

WATCH STATUS

TROPICAL STORM/HURRICANE OPERATIONS LOG

NAME OF STORM:

DATE/TIME HST INI

1. WATCH NOTIFICATION:.....
2. NOTIFICATION LIST:
- a. **Official** In Charge:.....
- b. **Civil** Defense Agency (**245-4001**):.....
- c. County **Warning** Point (**Kauai P.D.**):.....
(245-9711)
3. CODE-A-PHONES RECORDINGS:.....
4. **RADIO** STATIONS NOTIFICATION:
- a. **KQNG** (2459527):.....
- b. **KUAI** (335-3173):.....
5. **OIC/AOIC** ACTIONS:
- a. Personnel Work Schedule:.....
- b. Confer **with** **CPHC/WSFO** Honolulu:.....
- c. Confer with **Civil** Defense **Administrator**:.....
- d. Confer **with** **Operations Officer**, **HANG**:
Kokee AFS
- e. Confer **with** **Weather** Station, **BKH**:.....
- f. Set-up **TS/Hurricane** Section (maps,
references, etc.)
- g. Check station **supplies** (**Aerological**):.....
- h. Check station **equipment** (Operation):..
- i. Check station **equip/comm** back-ups:.....
- j. Check survival s u p p l i e s :
6. **ADVISORY** UPDATES:
- | 1. C D () | PD () | KQNG () | KUAI () | CAP () |
|------------|--------|----------|----------|---------|
| 2. () | () | () | () | () |
| 3. () | () | () | () | () |
| 4. () | () | () | () | () |

7. ENTER **PERTINENT** INFORMATION ON WSO LIHUE FORM #19

TROPICAL STORM/HURRICANE OPERATIONS LOG

NAME OF STORM _____

DATE/TIME HST INI

1. WARNING NOTIFICATION:
2. NOTIFICATION LIST:.....
a. Official In Charge: _____
b. Civil Defense Administrator (2454001): _____
c. County Warning Point (Kauai Police
Dept. 245-9711): _____
3. CODE-A-PHONE RECORDINGS:
4. RADIO STATIONS:
a. KONG (2459527): _____
b. KUAI (335-3173): _____
5. SECURE STATION FACILITIES:
a. Prepare Office (shutters, windows, doors,
vehicle, etc.): _____
b. Secure/store all loose objects in area: _____
c. Secure Inflation bldg/Radome doors
(raise roll up doors): _____
d. Secure infla bldg cabinets: _____
e. Recheck emergency generator & fuel: _____
f. Recheck primary & secondary comm equip: _____
g. Store survival supplies in storage room: _____
6. WARNING UPDATES:
1. CD () PD () KQNG () KUAI () CAP ()
2. 0, () 0, 0, 0, - -
3. () () () () () _____
4. () () () () () _____
5. () () () () () _____
6. () () () () () _____

7. ENTER PERTINENT REMARKS ON WSO LIHUE FORM #19